Homework #2

Exercise 1. Cagan's model [the hard way]. In the Weimar Republic, one loaf of bread cost 1 mark in 1919. By 1923, the same loaf of bread cost 100 billion marks. The roots of German hyperinflation are studied in Cagan's paper. Read the paper, you should find that he estimated $m(t) - p(t) = -\alpha\pi^e(t) + \gamma + e_m(t)$ [cf. equation (11)] assuming that $\pi^e(t)$ obeys to an adaptive process (i.e., it is a weighted average of past inflation rates with decreasing weights [cf. equation (9)]). Given the adjustment parameter β, $\pi^e(t)$ can be computed as a weighted average and α can be estimated by OLS. Then the "optimal" estimated parameters α and β are those that maximize the R^2 (see Appendix A). He found that R^2 is maximized for $\beta = 0.2$ and $\alpha = 5.4$.

a) By using Cagan's data in the excel file (Table B3), estimate equation (11) and replicate the results of Table 3.

b) After carefully reading footnote 6, write a Matlab code to compute the expected term (column (3) of Table B1) for a given value of β. Note that expectations depend on β. Therefore, the code should work for a given β. Then check that by β=0.2 you get the column (3) values.

c) Show that estimation of equation (11) for β=0.2 solves Cagan's problems [help: compare different estimates for different values of β].

Note that results from your estimates should be slightly different from those obtained by Cagan, but just a second-order difference is observed.